At early dawn a band of crimson [(*f*) Second bright segment], extending some 4° or 5° up from the horizon, appears rather suddenly. This band widens a little and changes rapidly to a deep orange, with decided yellowish green higher up. On several occasions green and orange streamers [crepuscular rays] were sent up, much resembling the aurora as I have seen it *pictured*. It then changes to a lighter yellow; and a little later a very delicate pink, shading into violet [(*d*) First purple light] comes in above it at an altitude of about 25° or 30°. The changes are all very rapid, and frequently it is a very beautiful sight. Earlier, when at its maximum brilliancy, there were indications of streaks of velvety clouds that gave one the impression of a canopy of color spread overhead far to the east, although the sky directly overhead appeared to be entirely free from clouds [Compare Douglass' "soft etching," p. 625].

Whatever the cause of these phenomena it gave us here at Mount Wilson the most wonderfully brilliant sunset and sunrise effects I have ever witnessed.

SOLAR HALO OF SEPTEMBER 28, 1916, AT MIAMI, FLA.

By RICHARD W. GRAY, Meteorologist.

[Dated: Weather Bureau office, Miami, Fla., Oct. 5, 1916.]

A solar halo that developed several progressive and interesting phases was observed at Miami, Fla., on the morning of September 28, 1916. The most important of these phases is shown in the accompanying drawing, which is reproduced from the original sketches made at the time of observation. As no instruments were available for making accurate measurements, the solar distances given and the sun's altitude are estimates, and are, therefore, liable to error. Errors in the estimates of

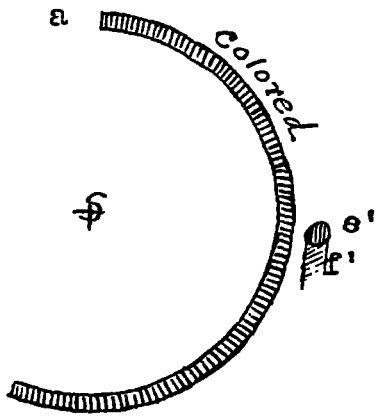

FIG. 1. Solar halo fragment seen at Miami, Fla., Sept. 28, 1916, 7:44 a. m., 90th M. time. *a*, arc of the 22°-halo; *e'*, parhelion of 22°; *f'*, Lowitz' arc(?).

the sun's altitude, however, can be corrected by computing the true altitudes from the time given and the latitude of Miami.

The phenomenon was first seen at 6:46 a. m., 90th meridian time, and at that time about 180° of the upper part of the halo of 22° was visible. To the left of the halo, and slightly above the altitude of the sun, there was a brightly colored arc, probably 5° in length, which strongly impressed the writer as being convex to the sun. The position of this arc relative to the halo and its solar distance (estimated between 35° and 40°) would seem to indicate, however, that the apparent convexity was an illusion and that the colored band was in reality a small segment of the tangent arc of the halo of 22°. The altitude of the sun at this phase of the halo was estimated at 18°.

At 7:07 a. m. the small arc to the left of the halo had disappeared and two parhelia had developed on the circumference of the halo. A rather poorly defined band of white light extended several degrees outward from the parhelion on the right of the sun, this undoubtedly being a fragment of the parhelic circle. The altitude of the sun at this time was probably 20°.

As the sun's altitude increased, the parhelia gradually separated from the halo's circumference, and by 7:40 a. m. they were well without the circle. At 7:44 a. m. (fig. 1) only the parhelion to the right of the sun was visible, and this parhelion had taken on an elongated form of 3° or 4° in extent. Both the parhelion and the band extending downward from it were brightly colored. The phenomenon was closely watched to see whether the band could be identified as a Lowitz arc, but it failed to show any appreciable curvature. This phase continued for about 20 minutes, the sun's altitude at the time being about 26°, The parhelia were visible at intervals to about 8:15 a. m.. and fragments of the halo were seen as late as 9:05 a. m.

METRIC SYSTEM FOR AERONAUTICS.

At the regular monthly meeting of the executive committee of the National Advisory Committee for Aeronautics, held December 7, 1916, the executive committee adopted the metric system as its standard so far as the committee is concerned, and recommendations will be sent to the various departments of the Government that this system be adopted in connection with all matters pertaining to aeronautics.

It is announced that the War Department will put this change into effect immediately in its Aviation Section, using both the metric and the English systems on all drawings for a time.

It is of interest to note in this connection that the upper-air meteorological observations carried on by the Weather Bureau, employed the metric system of units for all its work as early as 1908. The results secured in 1898 were published in English units, those for 1908 onward were published in metric units, beginning with the first issue of the Bulletin of the Mount Weather Observatory for August, 1908. The latest of the bureau's publications in this field, Supplements numbers 3 and 5 to the MONTHLY WEATHER REVIEW, adhere to this practice.

MEASUREMENT OF HORIZONTAL AND VERTICAL MOVEMENT IN THE ATMOSPHERE.[1]

By M. TENANI.

[*Reprinted from* Science Abstracts, Sect. A, Sept. 28, 1916, §989.]

A small captive balloon is employed. The curve of the cord is assumed to be a catenary. The problem then is—Given (1) the weight of the cord per unit of length, (2) the tension at the lower end of the cord (measured by a dynamometer), and (3) the angle made with the horizontal by the lower end of the cord, find (*a*) the tension at the upper end of the cord and (*b*) its direction. These, with the known ascensional force of the balloon, enable the required air-current data to be computed.—*A.* [*Daniell*].

[1] Nuovo cimento, Jan.-Feb., 1916, 11:87-94.